

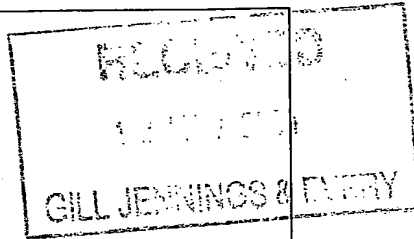
# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:

GILL JENNING & EVERY  
Broadgate House  
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GRANDE BRETAGNE



NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

11.11.2004

Applicant's or agent's file reference  
RSJ07599WO

### IMPORTANT NOTIFICATION

International application No.  
PCTGB 03/04200

International filing date (day/month/year)  
30.09.2003

Priority date (day/month/year)  
30.09.2002

Applicant  
OXFORD INSTRUMENTS PLC et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference RSJ07599WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/04200	International filing date (day/month/year) 30.09.2003	Priority date (day/month/year) 30.09.2002
International Patent Classification (IPC) or both national classification and IPC G01R33/38		
Applicant OXFORD INSTRUMENTS PLC et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
  - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

Date of submission of the demand  26.04.2004	Date of completion of this report  11.11.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Volmer, W  Telephone No. +31 70 340-3516



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/GB 03/04200**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-21 as originally filed

**Drawings, Sheets**

1/12-12/12 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	4, 7-14, 21
	No: Claims	1-3, 5, 6, 15-20
Inventive step (IS)	Yes: Claims	
	No: Claims	1 - 21
Industrial applicability (IA)	Yes: Claims	1-21
	No: Claims	

2. Citations and explanations

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following document:

D1: EP 0 399 789 A.

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 - 3, 5, 6, 15 - 20 is not new in the sense of Article 33(2) PCT:

Document D1 discloses:

- a magnet assembly comprising first and second sets of coils generating magnetic fields [sets of coils 108 in D1, fig. 7], wherein
  - the solenoid coils are constructed and arranged such that under working conditions a first region of a homogeneous magnetic field can be generated within the envelope defined by the magnet assembly and a second region of homogeneous magnetic field can be generated simultaneously outside the envelope, i.e. in region "110", and the resultant magnetic field in each region being sufficiently homogeneous to enable an NMR process to be performed on an object in the region
- cf. D1, fig. 8 which describes the magnetic field generated by magnet 1 and by magnet 2; furthermore, D1 discloses that the generated magnetic field is sufficiently homogeneous to enable an NMR process to be carried out, see col. 15, line 46 - col. 16, line 18; fig. 8 discloses that the generated magnetic field has the same homogeneity (sufficient for an NMR process) in both regions: within the envelope of the magnet assembly and outside the envelope [e.g. 10 cm to the right outside of the envelope of the magnet].

Therefore, the subject-matter of claims 1 - 3 is not new.

Also in D1, the second set of coils is nested [on itself], and furthermore the coil in the D1-second set is coplanar to itself. Therefore, also the subject-matter of claims 5 and 6 is not new.

Moreover, also in D1 the second set of coils is self-contained, i.e. it can be separated from the first set of coils without compromising its operational integrity. This feature can be derived directly and unambiguously from the disclosure of D1 [see the PCT Preliminary Examination Guidelines C-IV, 7.2], and therefore, also the subject-matter of claim 15 is not new.

Also in D1, the homogeneous region is substantially spherical, see D1, fig. 9. Hence, also the subject-matter of claim 16 is not new.

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Furthermore, it is apparent from D1, fig. 8, which discloses the gradient of the magnetic field generated in the second region, that the second homogeneous region is substantially disk-shaped and has a magnetic field gradient in the axial (the z-) direction. Therefore, also the subject-matter of claim 17 is not new.

Moreover, D1, fig. 8 discloses that the first homogeneous region is located within the first set of coils of magnet 1. Therefore, also the subject-matter of claim 18 is not new.

Moreover, obviously it is possible also in D1 to limit the homogeneous regions to an extent such that the magnetic field strength of each homogeneous region, depending on the axial length of the homogeneous region, varies by no more than 100 ppm; D1, fig. 8 indicates 6 T as the strength of the static magnetic field and it indicates that on an axial length of 1 mm the magnetic field does not vary by more than 6 G, hence not more than 100 ppm. Therefore, also the subject-matter of claim 19 is not new.

D1 discloses that the magnetic fields are generated by electromagnets [cf. claim 2], and D1 does not mention the use of superconducting coils. Hence, the feature that power supplies are coupled to the D1-coils to continuously energize them can be derived directly and unambiguously from the disclosure of D1 [see the PCT Preliminary Examination Guidelines C-IV, 7.2], and therefore, also the subject-matter of claim 20 is not new.

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The present application does not satisfy the criterion set forth in Article 33(3) PCT because the subject-matter of claims 4, 7 - 14 and 21 does not involve an inventive step [Rule 65(1) and (2) PCT]:

It is straightforward to the person skilled in the design of NMR magnets to apply the known principle of shielding NMR magnets to the disclosure of D1, i.e. to actively shield the magnets "108" of D1, fig.7, which means that at least two of the coils of the second set "108" have to be arranged to carry currents in opposite senses. Therefore, the subject-matter of claims 4 and 7 lacks an inventive step.

Moreover, it is straightforward for the skilled person that, when applying the shielding principle to the D1-disclosure, the second set of coils, e.g. the lower set of coils in D1, fig. 7, comprises at least two set of coils, i.e. coil "108" and the shielding coil, located adjacent an opposite side of the first set of coils to the corresponding second set of coils.. Therefore, the subject-matter of claims 8 and 21 lacks an inventive step.

Applying the known shielding principle to the disclosure of D1 means that in the first homogeneous region [which may be as small as required by the actual working conditions] each pair of coils does not generate a linear magnetic field gradient, in other words a substantially zero first order magnetic field gradient, and that the gradients of higher order are of opposing senses. Therefore, the subject-matter of claim 9 lacks an inventive step.

D1 does not disclose the kind of electromagnet used. But it is straightforward for the skilled person to carry out both sets of electromagnets as superconducting magnets, in particular from HTS superconductors, which as every known superconductor have to be located in a cryostat, preferably in the same cryostat, see the D1-magnet in fig. 4. Therefore, the subject-matter of claims 10 - 14 lacks an inventive step.